

JAN 20 2005

**Patent**  
**PD-200108**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In Re Application of:

Date: January 20, 2005

Ying J. Feria, et al.

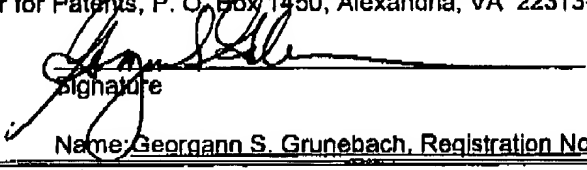
Serial No. 09/661,967

Group Art Unit: 2684

Filed: 09/14/2000

Examiner: Ly, Nghi H.

For: STRATOSPHERIC-BASED COMMUNICATION SYSTEM HAVING  
INTERFERENCE REJECTION CANCELLATION

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Date: <b>January 20, 2005</b>	Name: <b>Georgann S. Grunebach, Registration No. 33,179</b>

**BRIEF ON APPEAL**

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
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Sir:

The following Appeal Brief is submitted pursuant to the Notice of Appeal filed on  
November 24, 2004 for the above-identified application.

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**I. Real Party in Interest**

The real party in interest in this matter is The DIRECTV Group, Inc of El Segundo, California which is 34 percent owned by Fox Entertainment Group, which is approximately 82 percent owned by The News Corporation, Limited.

**II. Related Appeals and Interferences**

There are no other known appeals or interferences which will directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

**III. Status of the Claims**

Claims 1-24 stand rejected in the Final Office Action.

**IV. Status of Amendments Filed After Final**

There have been no Amendments filed after the final rejection.

**V. Summary of the Invention**

Claim 1 is directed to a communication system (10) that is generally illustrated in figure 1 and is described on pages 5-7. The communication system (10) includes a stratospheric platform (18) having a payload controller and a phased array antenna having a plurality of elements for generating a first beam and a second beam. A gateway station (20) in communication with said stratospheric platform (18) receives a first signal having a first beam having interference from the second beam therein and a second signal having a second beam having interference from the first beam therein. As is best shown in

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Figure 3 and the corresponding text on pages 9-10, the gateway station (20) includes a first subtracting block (74) for subtracting the second signal from the first signal to obtain the first beam and a second subtracting block (76) for subtracting the first signal from the second signal to obtain a second beam. One point to note is that only two signals are received to form two beams. This is in contrast to the prior art, especially that present in the *Mesecher* reference as will be described below.

Claim 2 is dependent upon Claim 1 and recites that the gateway station weights the second signal with the first weight prior to subtracting the second signal from the first signal, which is illustrated in Figure 3.

Claim 3 depends upon Claim 1 and recites that the gateway station weights the first signal with the second weight prior to subtracting the second signal from the first signal as is shown in Figure 3.

Claim 4 depends from Claim 2 and recites that the first weight is a function of user position files.

Claim 5 depends from Claim 1 and recites that the payload controller of Figure 1 comprises a demultiplexer for receiving control signals.

Claim 6 is dependent from Claim 5 and recites that the demultiplexer generates a plurality of element control signals as is best shown in Figure 2.

Claim 7 is dependent from Claim 6 and recites that the element control signals are coupled to an RF feed and the RF feed is coupled to the plurality of elements of the phased array antenna. The RF feeds are generally illustrated as 56 in Figure 2.

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Claim 8 is dependent upon Claim 1 and recites that the gateway station comprises a beam generator for generating beam signals. The beam generator is generally illustrated as 42 of Figure 2.

Claim 9 depends from Claim 1 and recites that the gateway station further comprises a multiplexer/demultiplexer. The multiplexer/demultiplexer is illustrated as 44 of Figure 2.

Claim 10 depends from Claim 9 and recites that the multiplexer/demultiplexer 44 comprises a code division multiplexer.

Claim 11 is dependent upon Claim 1 and recites that the gateway station is coupled to a terrestrial network illustrated in Figure 2.

Claim 12 is dependent upon Claim 11 and recites that the terrestrial network comprises the Internet.

Claim 13 depends from Claim 11 and recites that the terrestrial network comprises a public service telephone network.

Claim 14 is an independent claim directed to a method of controlling a communication system 10 having a stratospheric platform. Figure 3 generally illustrates the method for performing the method. Claim 14 recites receiving a first signal having first beam interference from a second beam therein at a gateway station. Claim 14 also recites receiving a second signal having a second beam having interference from the first beam therein at the gateway station. Claim 14 further recites the step of subtracting the

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second signal from the first signal to obtain the first beam and subtracting the first signal from the second signal to obtain the second beam.

Claim 15 depends from Claim 14 and recites that prior to the steps of receiving, generating the first beam and the second beam using the payload controller and the phase array antenna having a plurality of elements therefore. Claim 15 further recites that prior to the step of subtracting said second signal from the first signal, weighting the second signal with the first weight and prior to the step of subtracting the first signal from the second signal weighting the first signal with the second weight.

Claim 16 depends from Claim 15 and recites performing the step of subtracting the second signal from the first signal to obtain the first beam in a first subtracting block in the gateway station and performing the step of subtracting the first signal from the second signal to obtain the second beam in a second subtracting block in the gateway station.

Claim 17 depends from Claim 15 and recites that the first weight and the second weight are a function of user position files.

Claim 18 is another independent claim and recites the steps of receiving the first signal having a first beam having interference from a second beam therein, receiving a second signal from the second beam having interference from the first beam therein at the gateway station, weighting the first signal with the first weight to provide a weighted first signal, weighting the second signal with the second weight to provide a weighted second signal, subtracting the second weighted signal from the first signal to obtain the first

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beam and subtracting the weighted signal from the second signal to obtain the second beam.

Claim 19 is dependent upon Claim 18 and recites the first weight and the second weight are a function of user position files.

Claim 20 is an independent claim and recites a method of canceling interference at the gateway station that includes receiving a plurality of signals from each of the plurality of users. The at least one of the plurality of signals has interference therein from at least one other of the plurality of signals. Claim 20 further recites determining an amount of interference from the user position file and canceling the interference in at least one of the plurality of signals by subtracting at least one other of the plurality of signals.

Claim 21 depends upon Claim 20 and recites that prior to the step of canceling the at least one other of the plurality of signals is weighted.

Claim 22 depends upon Claim 21 and recites that one signal is associated with a mobile user.

Claim 23 depends from Claim 22 and recites that one of the other of the plurality of signals is associated with a mobile user.

Claim 24 depends from Claim 3 and recites that the second weight is a function of user position files.

## **VI. Grounds of Rejection to be Reviewed on Appeal**

The following issue is presented in this appeal:

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Whether Claims 1-24 are obvious under 35 U.S.C. §103(a) over *Ibanez-Meier* (6,151,308) in view of *Mesecher* (6,289,004).

## VII. Argument

### The Rejection of Claims 1-24 under 35 U.S.C. §103(a)

#### Claim 1

The Examiner cites the *Ibanez-Meier* reference for teaching a stratospheric platform having a payload controller that generates various beams. Also, as the Examiner points out, a reference to communication gateways exists in Col. 4, lines 60-65. The *Ibanez-Meier* reference teaches stratospheric platforms and satellites at various altitude levels. A user may receive signals from two different sources. The system relies on spatial diversity to prevent interference. As the reference implies, when two signal sources become colinear or near colinear, interference between the signals may result in unacceptable signal degradation. As stated beginning in Col. 16, line 61, signal degradation may be remedied by ceasing to communicate over one of the links in which degradation is present or switching to another link. This highlights the spatial diversity aspect for resolving interference. No teaching or suggestion is provided for subtracting signals as in the present invention.

The *Mesecher* reference is cited for the teaching of a first subtracting block and a second subtracting block. Appellants agree that the *Mesecher* reference does provide adaptive cancellation and uses subtraction. However, the way in which *Mesecher* prevents interference is very different than that recited in the claims of the present

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invention. As recited in claim 1 of the present application, "said gateway station receiving a first signal having a first beam having interference from the second beam therein and receiving a second signal having said second beam having interference from the first beam therein." It should be noted from this recitation that two signals are received to form two beams. This is in contrast to the *Mesecher* reference that employs a separate antenna that is directed to an interference source. The interference source signal from the interference source antenna is subtracted from the received signal. Appellants teach that, "The gateway station comprises a first subtracting block for subtracting the second signal from the first signal to obtain the first beam" and that "The gateway station has a second subtracting block for subtracting the first signal from the second signal to obtain a second beam." Thus, the constituents of each beam being subtracted is different than that of the *Mesecher* reference. Therefore, no teaching or suggestion is provided for "said gateway station comprising a first subtracting block for subtracting said second signal from said first signal to obtain the first beam" and "said gateway station comprising a second subtracting block for subtracting said first signal from said second signal to obtain a second beam."

It would not be obvious to combine the two references since the *Ibanez-Meier* reference teaches away from the use of subtracting signals by its use of spatial diversity. The *Ibanez-Meier* reference acknowledges the fact that two signals may interfere but chooses to move the link or shut down the link in the presence of interference. The *Mesecher* reference uses a separate antenna directed at the interference source to provide



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an interference signal to be subtracted from a received signal. Thus, even if the references are combined, the present invention is not formed. Namely, said gateway station comprising a first subtracting block for subtracting said second signal from said first signal to obtain a first beam and said gateway station comprising a second subtracting block for subtracting said first signal from said second signal to obtain a second beam is not taught or suggested.

With respect to Claim 1, the Examiner alleges that "it would have been obvious for one of ordinary skill in the art at the time the invention was made to combine the teaching of *Mesecher* to that of *Ibanez-Meier*, so that communication channels could be more reliable when using the stratospheric platform structure." However, as pointed out in the previous response, *Ibanez-Meier* clearly teaches specific ways of avoiding unacceptable signal degradation on col. 16, lines 61-67 and col. 17, lines 1-3 as follows:

"Avoiding the signal degradation could entail, for example, ceasing to communicate over the link until the threat of degradation is passed, changing the parameters (e.g., the frequency) of the communication so that the degradation will be minimized or will not be present, or switching communications to another non-interfering satellite or other device."

In the face of such clear teaching in *Ibanez-Meier* of specific ways of avoiding signal degradation, one of ordinary skill in the art would not be motivated to look to *Mesecher* or some other source of teaching for some other way of avoiding the unacceptable signal degradation.

It is respectfully submitted that the Examiner has failed to set forth a *prima facie* case and carry his burden of establishing why one having ordinary skill in the art would

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have been led to the claimed invention by the reasonable teachings or suggestions found in the prior art, or by a reasonable inference to the artisan contained in such teachings or suggestions. In *re Sernaker*, 702 F. 2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983). In view of the specific teachings in *Ibanez-Meier*, it is submitted that the motivation would have been to use one of the methods suggested by *Ibanez-Meier*. According to the Federal Circuit, the mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification. See *In re Fritch*, 972 F. 2d 1260, 1266 n. 14, 23 USPQ2d 1780, 1783-84 n. 14 (Fed. Cir. 1992), citing *In re Gordon*, 733 F. 2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). Since *Ibanez-Meier* teaches specific ways of avoiding signal degradation, presumably "so that communication channels could be more reliable when using the stratospheric platform structure", the Examiner has failed to carry his burden of establishing why an ordinary artisan would be motivated to combine the teaching of *Mesecher* in this matter to that of *Ibanez-Meier*. Additionally, even if for some reason the ordinary artisan combined the teachings, as discussed below, it still would not render obvious the present claimed invention.

*Mesecher* clearly addresses adaptive cancellation of fixed interferers. As pointed out in the earlier response in detail, *Mesecher* uses a main antenna for receiving signals from other communication stations and at least one directional antenna directed toward a known fixed interference source. *Mesecher* uses a separate antenna directed at the interference source to provide an interference signal to be subtracted from a received

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signal. Appellants teach "said gateway station comprising a first subtracting block for subtracting said second signal from said first signal to obtain the first beam" and "said gateway station comprising a second subtracting block for subtracting said first signal from said second signal to obtain a second beam." Thus, the constituents of each beam being subtracted are different from that of the *Mesecher* reference. In Claim 1, both first and second signals are signals that are being processed by the gateway station for transmission and neither is an undesired signal from a known fixed interferer.

It is respectfully submitted that neither *Ibanez-Meier* nor *Mesecher* provide suggestions or motivation for the combination proposed by the Examiner. It appears that the Examiner is using impermissible hindsight gained from the teachings of the present application. Obviousness may not be established using hindsight or in view of the teachings of the inventor. It is improper, in determining whether a person of ordinary skill in the art would have been led to this combination of references, simply to use that which the inventor taught against the teacher. See W. L. Gore v. Garlock, Inc., 721 F. 2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983).

## Claim 2

Claim 2 is believed to be independently patentable since the combination of references does not teach weighting a second signal with the first weight prior to subtracting the second signal from the first signal.

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**Claim 3**

Claim 3 is also believed to be independently patentable for the similar reasons set forth with respect to Claim 2 in that weighting is claimed. That is, weighting the first signal with a second weight prior to subtracting the second signal from the first signal is described.

**Claim 4**

Claim 4 is believed to be independently patentable since Claim 4 recites that the first weight is a function of user position files. The combination of references does not teach that the first weight is a function of user position files.

**Claim 5**

Claim 5 is believed to be independently patentable since the payload controller comprises a demultiplexer for receiving control signals. This element in combination with that of Claim 1 is not taught or suggested in the combination of the references.

**Claim 6**

Claim 6 depends upon Claim 5 and recites that the demultiplexer generates a plurality of control signals. This in combination with the recitations of Claim 1 are not taught or suggested in the references.

**Claim 7**

Claim 7 depends from Claim 6 and recites that the element control signals are coupled to an RF feed which is coupled to elements of the phased array antenna. This in combination with the recitations of Claim 1 are not taught or suggested in the references.

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**Claim 8**

Claim 8 recites that the gateway station comprises a beam generator for generating beam signals. The beam generator in combination with the elements of Claim 1 are not taught or suggested in the combination of references.

**Claim 9**

Claim 9 recites that the gateway station comprises a multiplexer/demultiplexer. The combination of Claim 9 with Claim 1 is not taught or suggested in the combination of references.

**Claim 10**

Claim 10 depends from Claim 9 and recites that the multiplexer/demultiplexer comprises a code division multiplexer/demultiplexer. This in combination with the elements of Claim 1 are not taught or suggested in the combination of references.

**Claim 11**

Claim 11 recites that the gateway station is coupled to a terrestrial network. This in combination with the recitations of Claim 1 are not taught or suggested in the combination of references.

**Claim 12**

Claim 12 depends from Claim 11 and recites that the terrestrial network comprises an Internet.

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**Claim 13**

Claim 13 recites that the terrestrial network comprises a public service telephone network. The combination of Claims 12 and 13 ultimately with Claim 11 are not taught or suggested in the combination of references.

**Claim 14**

Independent claim 14 is similar to that of claim 1 in method form. Claim 14 recites the steps of subtracting said second signal from said first signal to obtain the first beam; and subtracting said first signal from said second signal to obtain the second beam. Claim 14 is allowable for the same reasons set forth with respect to Claim 1.

**Claim 15**

Claim 15 depends from Claim 14 and is believed to be allowable for the same reasons set forth above with respect to Claims 2 and 3 since Claim 15 also recites the weighting of the signals.

**Claim 16**

Claim 16 recites the specific recitations of performing the subtracting in a gateway station. This is not taught or suggested in the combination of references.

**Claim 17**

Claim 17 recites that the first weight and the second weight are a function of user position files. This in combination with Claims 15 and 14 is not taught or suggested in the combination of references set forth by the Examiner.

**Claim 18**

Claim 18 is an independent method claim also having similar limitations.

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**Claim 19**

Claim 19 depends from Claim 18 and recites the first weight and second weight as a function of user position files. This in combination with the recitations of Claim 18 are not taught or suggested in the combination of the references.

**Claims 20**

Claim 20 is an independent claim directed to a method of canceling interference at a gateway station. Claim 20 recites, "plurality of signals" from a plurality of users. As discussed in the specification, for example on page 10, because the signals are all received at the gateway station, the amount of interference can be determined from the relative positions of the beams from the user position files within the gateway station. Based on the positions of the beams, interference levels may be determined for cancellation purposes. Thus, since the user signals all arrive at the gateway, signal processing can be very efficiently used for interference cancellation at the gateway. These aspects are neither suggested nor shown by *Ibanez-Meier* and *Mesecher* whether they are considered singly or in combination.

On page 7 of the Office Action, the Examiner states that, "In this case, the motivation to do so found in the knowledge generally available to one of ordinary skill in the art. (It is in the knowledge generally available to one of ordinary skill in the art that the communication channels could be more reliable when using the stratospheric platform structure). In addition, applicant's attention is directed to the rejection of 1 above." Appellants respectfully submit that even when the references are combined that

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the present invention is not formed. The Examiner on page 3 states that it is inherent that the present invention can be formed by "reversing the operation." Appellants respectfully disagree. The signal being subtracted in the *Mesecher* reference is a specific signal from the directional antenna. Such a signal is used because it is specific to the interference source. Thus, merely revising the operation cannot form the present invention.

It should also be noted that the specifics of the present invention are very suitable for a gateway station. The beams are the received beams from a stratospheric platform. The beams may be geographically separated, but still may contain interference from other beams. The signals when all returned to the gateway station may be used to obtain better signals without such things as a separate directional antenna. In the case of the present invention, a directional antenna at the stratospheric platform, for example, would increase the weight and thus increase the cost of the system. Therefore, modifying *Mesecher* to form the present invention is not obvious as the Examiner suggests.

#### **Claim 21**

Claim 21 depends from independent Claim 20 and recites that the signals are weighted. This is similar to Claims 2 and 3 above and is believed to be allowable for the same reasons set forth therein.



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**Claim 22**

Claim 22 recites that one of the signals is associated with a mobile user. Although mobile users are illustrated in the references, no teaching or suggestion is provided in the combination of references for the recitations of Claims 21 and 20.

**Claim 23**

Claim 23 depends upon Claim 22 and recites that the other of the plurality of signals is associated with a mobile user. This also is not taught or suggested as discussed above with respect to Claim 22.

**Claim 24**

Claim 24 depends from Claim 3 and recites that the second weight is a function of user position files. The lack of a teaching of user position files is mentioned above with respect to Claims 19 and 17. Appellants believe that this claim is also allowable for the same reasons with respect to those claims.

**VIII. Appendix**

A copy of each of the claims involved in this appeal, namely Claims 1-24.

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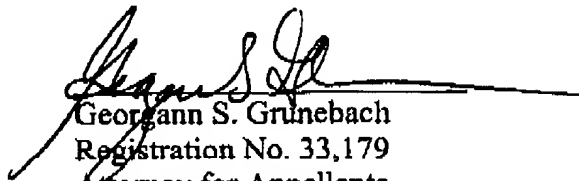
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**IX. Conclusion**

For the foregoing reasons, Appellants respectfully request that the Board direct the Examiner in charge of this examination to withdraw the rejections.

Please charge any fees required in the filing of this appeal to applicant's deposit account 50-0383.

Respectfully submitted,

  
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Attorney for Appellants

Date: January 20, 2005

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**APPENDIX A****1. A communications system comprising:**

stratospheric platform having a payload controller and a phased array antenna having a plurality of elements for generating a first beam and a second beam;

a gateway station in communication with said stratospheric platform, said gateway station receiving a first signal having the first beam having interference from the second beam therein and receiving a second signal having the second beam having interference from the first beam therein,

said gateway station comprising a first subtracting block for subtracting said second signal from said first signal to obtain the first beam;

said gateway station comprising a second subtracting block for subtracting said first signal from said second signal to obtain the second beam.

2. A communications system as recited in claim 1 wherein said gateway station weights said second signal with a first weight prior to subtracting said second signal from said first signal.

3. A communications system as recited in claim 1 wherein said gateway station weights said first signal with a second weight prior to subtracting said second signal from said first signal.

4. A communications system as recited in claim 2 wherein said first weight is a function of user position files.

5. A communications system as recited in claim 1, wherein the payload controller comprises a demultiplexer for receiving control signals.

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6. A communications system as recited in claim 5, wherein the demultiplexer generates a plurality of element control signals.

7. A communications system as recited in claim 6, wherein the element control signals are coupled to an RF feed, and the RF feed is coupled to said plurality of elements of said phased array antenna.

8. A communications system as recited in claim 1, wherein the gateway station comprises a beam generator for generating beam signals.

9. A communications system as recited in claim 1, wherein said gateway station further comprises a multiplexer/demultiplexer.

10. A communications system as recited in claim 9, wherein said multiplexer/demultiplexer comprises a code division multiplexer/demultiplexer.

11. A communications system as recited in claim 1, wherein said gateway station is coupled to a terrestrial network.

12. A system as recited in claim 11, wherein said terrestrial network comprises an Internet.

13. A system as recited in claim 11, wherein the terrestrial network comprises a public service telephone network.

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14. A method of controlling a communications system having a stratospheric platform, said method comprising the steps of:

receiving a first signal having a first beam having interference from a second beam therein at a gateway station;

receiving a second signal having a second beam having interference from the first beam therein at the gateway station,

subtracting said second signal from said first signal to obtain the first beam;

and

subtracting said first signal from said second signal to obtain the second beam.

15. A method as recited in claim 14, further comprising, prior to the steps of receiving, generating the first beam and the second beam using a payload controller and a phased array antenna having a plurality of elements therefore, and wherein prior to the step of subtracting said second signal from the first signal; weighting the second signal with a first weight, and prior to the step of subtracting said first signal from said second signal, weighting the first signal with a second weight.

16. A method as recited in claim 15, further comprising:

performing said step of subtracting said second signal from said first signal to obtain the first beam in a first subtracting block in the gateway station; and

performing said step of subtracting said first signal from said second signal to obtain the second beam in a second subtracting block in the gateway station.

17. A method as recited in claim 15 wherein said first weight and said second weight are a function of user position files.

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18. A method of controlling a communications system having a stratospheric platform, said method comprising the steps of:

receiving a first signal having a first beam having interference from a second beam therein at a gateway station;

receiving a second signal having the second beam having interference from the first beam therein at the gateway station,

weighting said first signal with a first weight to provide a weighted first signal;

weighting said second signal with a second weight to provide a weighted second signal;

subtracting said weighted second signal from said first signal to obtain the first beam; and

subtracting said weighted second signal from said second signal to obtain the second beam.

19. A method as recited in claim 18 wherein said first weight and said second weight are a function of user position files.

20. In a communication system having a gateway station for processing signals to and from a plurality of users, a method of canceling interference at the gateway station, comprising:

receiving a plurality of signals, each from one of the plurality of users, at least one of said plurality of signals having interference therein from at least one other of said plurality of signals;

determining an amount of interference from user position files;

canceling the interference in said at least one of said plurality of signals by subtracting said at least one other of said plurality of signals.

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21. A method as recited in claim 20, wherein, prior to the step of canceling, said at least one other of said plurality of signals is weighted.

22. A method as recited in claim 21, wherein said at least one signal is associated with a mobile user.

23. A method as recited in claim 22, wherein said at least one other of said plurality of signals is associated with a mobile user.

24. A communications system as recited in claim 23, wherein said second weight is a function of user position files.

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In re Application of: Ying J. Ferla, et al.

Date: January 20, 2005

Serial No.: 09/661,967

Filed: September 14, 2000

For: STRATOSPHERIC-BASED COMMUNICATION SYSTEM  
HAVING INTERFERENCE REJECTION CANCELLATION

Group Art Unit: 2684

Examiner: Nghi H. Li

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**APPEAL BRIEF  
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Sir:

Enclosed is the Appeal Brief for the above-identified patent application.

\_\_\_\_\_ Applicant petitions for an extension of time for \_\_\_\_\_ months(s). If an additional extension of time is required, please consider this a petition therefor.

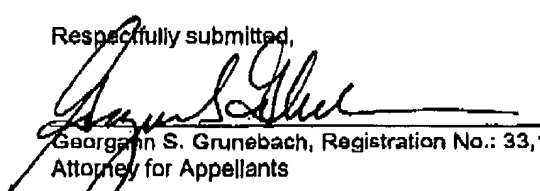
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is deducted from the total fee due for the total months of extension now requested. \$ \_\_\_\_\_  
Extension fee due with this request \$ \_\_\_\_\_

☒ Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition for extension of time.

☒ The Appeal Brief Fee of \$ 500.00 is due.

☒ The total fee due is \$ 500.00. Please charge this amount to Deposit Account No. 50-0383 of The DIRECTV Group, Inc. (formally Hughes Electronics Corporation), El Segundo, California. If any additional appeal brief fee or extension fee is required, please charge to Deposit Account No. 50-0383.

Respectfully submitted,

  
Georgann S. Grunebach, Registration No.: 33,179  
Attorney for Appellants**CERTIFICATE OF MAILING UNDER 37 CFR 1.8**

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail, in an envelope addressed to Mail Stop Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on January 20, 2005, by Georgann S. Grunebach, Registration No. 33,179.

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